ABSTRACT OF THE DISCLOSURE

A method of fabricating a DNA molecule of user-defined sequence. The method comprises the steps of preselecting a multiplicity of DNA sequence segments that will comprise the DNA molecule of user-defined sequence, separating the DNA sequence segments temporally, and combining the multiplicity of DNA sequence segments with at least one polymerase enzyme wherein the multiplicity of DNA sequence segments join to produce the DNA molecule of user-defined sequence. Sequence segments may be of length n, where n is an even or odd integer. In one embodiment the length of desired hybridizing overlap is specified by the user and the sequences and the protocol for combining them are guided by computational (bioinformatics) predictions. In one embodiment sequence segments are combined from multiple reading frames to span the same region of a sequence, so that multiple desired hybridizations may occur with different overlap lengths. In one embodiment starting sequence fragments are of different lengths, n, n+1, n+2, etc.